RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: _10/051,909A_

Source: _/FW/6_

Date Processed by STIC: _7/20/05_

ENTERED

IFW16

RAW SEQUENCE LISTING   DATE: 07/20/2005
PATENT APPLICATION: US/10/051,909A   TIME: 11:22:53

Input Set : **A:\10051909 Sequence Listing.txt**
Output Set: **N:\CRF4\07202005\J051909A.raw**

```
 3 <110> APPLICANT: Helentjaris, Tim
 5 <120> TITLE OF INVENTION: Plant Sugar Transport Proteins
 7 <130> FILE REFERENCE: 2119-4263 (BB1163 US CIP)
 9 <140> CURRENT APPLICATION NUMBER: 10/051,909A
10 <141> CURRENT FILING DATE: 2002-01-17
12 <160> NUMBER OF SEQ ID NOS: 56
14 <170> SOFTWARE: Microsoft Office 97
16 <210> SEQ ID NO: 1
17 <211> LENGTH: 2824
18 <212> TYPE: DNA
19 <213> ORGANISM: Zea mays
21 <220> FEATURE:
22 <221> NAME/KEY: unsure
23 <222> LOCATION: (29)
24 <223> OTHER INFORMATION: n = a, c, g or t
26 <220> FEATURE:
27 <221> NAME/KEY: unsure
28 <222> LOCATION: (622)
29 <223> OTHER INFORMATION: n = a, c, g or t
31 <220> FEATURE:
32 <221> NAME/KEY: unsure
33 <222> LOCATION: (636)
34 <223> OTHER INFORMATION: n = a, c, g or t
36 <220> FEATURE:
37 <221> NAME/KEY: unsure
38 <222> LOCATION: (638)
39 <223> OTHER INFORMATION: n = a, c, g or t
41 <220> FEATURE:
42 <221> NAME/KEY: unsure
43 <222> LOCATION: (669)
44 <223> OTHER INFORMATION: n = a, c, g or t
46 <220> FEATURE:
47 <221> NAME/KEY: unsure
48 <222> LOCATION: (771)
49 <223> OTHER INFORMATION: n = a, c, g or t
51 <220> FEATURE:
52 <221> NAME/KEY: unsure
53 <222> LOCATION: (822)
54 <223> OTHER INFORMATION: n = a, c, g or t
56 <220> FEATURE:
57 <221> NAME/KEY: unsure
58 <222> LOCATION: (856)
59 <223> OTHER INFORMATION: n = a, c, g or t
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```
 61 <220> FEATURE:
 62 <221> NAME/KEY: unsure
 63 <222> LOCATION: (889)
 64 <223> OTHER INFORMATION: n = a, c, g or t
 66 <220> FEATURE:
 67 <221> NAME/KEY: unsure
 68 <222> LOCATION: (896)
 69 <223> OTHER INFORMATION: n = a, c, g or t
 71 <220> FEATURE:
 72 <221> NAME/KEY: unsure
 73 <222> LOCATION: (944)
 74 <223> OTHER INFORMATION: n = a, c, g or t
 76 <400> SEQUENCE: 1
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```
W--> 77 cccacccccc tccactccac taccacggng gcacggcctg cctctgcagc tctgccctgc   60
     78 tccgcacccc tcgctctcca accccaacgc gcggcgttgc taaaattcac ctcagcgcgt  120
     79 actccagttt ggccacctca ccacccgccg ccgctgttta agaaggcccc gcgcccgatc  180
     80 ggggatcacg aaccttggcc gccgctgccg gagtgggggc gtagatttcc ggcggccatg  240
     81 gggggcgccg tgatggtcgc catcgcggcc tctatcggca acttgctgca gggctgggac  300
     82 aatgcgacaa ttgctggagc cgtcctgtac ataaagaagg aattcaacct gcagagcgag  360
     83 cctctgatcg aaggcctcat cgtcgccatg ttcctcattg gggcaacagt catcacaaca  420
     84 tctccggggc caagggctga ctgcgttggt aggaggccca tgctggtcgc ctcggctgtc  480
     85 ctctacttcg tcagtgggct ggtgatgctt tgggcgccaa ttgtgtacat cttgctcctc  540
     86 gcaaggctca ttgatgggtt cggtatcggt ttggcggtca cacttgttcc tctctacatc  600
     87 tccgaaactg caccgcacag anattcttgg ggctgntnga acacgttgcc gcagttcatt  660
     88 ggggtcagng gagggatgtt cctctcctac tgcatggtgt ttgggatgtc cctcatgccc  720
     89 aaacctgatt ggaggctcat gcttggagtt ctgtcgatcc cgtcacttat ntactttgga  780
     90 ctgactgtct tctacttgcc tgaatcacca aggtggcttg tnagcaaagg aaggatggcg  840
     91 gaggcgaaga gagtgntgca aaggctgcgg ggaagagaag atgtctcang ggaganggct  900
     92 cttctagttg aaggtttggg ggtcggtaaa gatacacgta tttnagagta catcattgga  960
     93 cctgccaccg aggcagccga tgatcttgta actgacggtg ataaggaaca aatcacactt 1020
     94 tatgggcctg aagaaggcca gtcatggatt gctcgacctt ctaagggacc catcatgctt 1080
     95 ggaagtgtgc tttctcttgc atctcgtcat gggagcatgg tgaaccagag tgtacccctt 1140
     96 atggatccga ttgtgacact ttttggtagt gtccatgaga atatgcctca agctggagga 1200
     97 agtatgagga gcacattgtt tccaaacttt ggaagtatgt tcagtgtcac agatcagcat 1260
     98 gccaaaaatg agcagtggga tgaagagaat cttcataggg atgacgagga gtacgcatct 1320
     99 gatggtgcag gaggtgacta tgaggacaat ctccatagcc cattgctgtc caggcaggca 1380
    100 acaggtgcgg aagggaagga cattgtgcac catggtcacc gtggaagtgc tttgagcatg 1440
    101 agaaggcaaa gcctcttagg ggagggtgga gatggtgtga gcagcactga tatcggtggg 1500
    102 ggatggcagc ttgcttggaa atggtcagag aaggaaggtg agaatggtag aaaggaaggt 1560
    103 ggtttcaaaa gagtctactt gcaccaagag ggagttcctg gctcaagaag gggctcaatt 1620
    104 gtttcacttc ccggtggtgg cgatgttctt gagggtagtg agtttgtaca tgctgctgct 1680
    105 ttagtaagtc agtcagcact tttctcaaag ggtcttgctg aaccacgcat gtcagatgct 1740
    106 gccatggttc acccatctga ggtagctgcc aaaggttcac gttggaaaga tttgtttgaa 1800
    107 cctggagtga ggcgtgccct gttagtcggt gttggaattc agatccttca acagtttgct 1860
    108 ggaataaacg gtgttctgta ctataccccca caaattcttg agcaagctgg tgtggcagtt 1920
    109 attcttttcca aatttggtct cagctcggca tcagcatcca tcttgatcag ttctctcact 1980
    110 accttactaa tgcttccttg cattggcttt gccatgctgc ttatggatct ttccggaaga 2040
    111 aggttttttgc tgctaggcac aattccaatc ttgatagcat ctctagttat cctggttgtg 2100
    112 tccaatctaa ttgatttggg tacactagcc catgctttgc tctccaccat cagtgttatc 2160
```

```
113 gtctacttct gctgcttcgt tatgggattt ggtcccatcc ccaacatttt atgtgcagag 2220
114 atctttccaa ccagggttcg tggcctctgt attgccattt gtgcctttac attctggatc 2280
115 ggagatatca tcgtcaccta cagccttcct gtgatgctga atgctattgg actggcgggt 2340
116 gttttcagca tatatgcagt cgtatgcttg atttcctttg tgttcgtctt ccttaaggtc 2400
117 cctgagacaa aggggatgcc ccttgaggtt attaccgaat tctttgcagt tggtgcgaag 2460
118 caagcggctg caaaagccta atttctttgg tacctttgtg tgcaactatt gcactgtaag 2520
119 ttagaaactt gaaggggttt caccaagaag ctcggagaat tactttggat ttgtgtaaat 2580
120 gttaagggaa cgaacatctg ctcatgctcc tcaaacggta aaaagagtc cctcaatggc 2640
121 aaataggagt cgttaagttg tcaatgtcat ttaccatatg ttttacctat ttgtactgta 2700
122 ttataagtca agctattcaa cgctggttgt tgctagaaat ctttagaaca aagatgataa 2760
123 tgatctgatc tgatgttata atattcaaat ctcaaataaa gaaaatatcg tttctcaaaa 2820
124 aaaa                                                           2824
126 <210> SEQ ID NO: 2
127 <211> LENGTH: 747
128 <212> TYPE: PRT
129 <213> ORGANISM: Zea mays
131 <220> FEATURE:
132 <221> NAME/KEY: UNSURE
133 <222> LOCATION: (129)
134 <223> OTHER INFORMATION: Xaa = any amino acid
136 <220> FEATURE:
137 <221> NAME/KEY: UNSURE
138 <222> LOCATION: (133)..(134)
139 <223> OTHER INFORMATION: Xaa = any amino acid
141 <220> FEATURE:
142 <221> NAME/KEY: UNSURE
143 <222> LOCATION: (144)
144 <223> OTHER INFORMATION: Xaa = any amino acid
146 <220> FEATURE:
147 <221> NAME/KEY: UNSURE
148 <222> LOCATION: (178)
149 <223> OTHER INFORMATION: Xaa = any amino acid
151 <220> FEATURE:
152 <221> NAME/KEY: UNSURE
153 <222> LOCATION: (207)
154 <223> OTHER INFORMATION: Xaa = any amino acid
156 <220> FEATURE:
157 <221> NAME/KEY: UNSURE
158 <222> LOCATION: (218)
159 <223> OTHER INFORMATION: Xaa = any amino acid
161 <220> FEATURE:
162 <221> NAME/KEY: UNSURE
163 <222> LOCATION: (220)
164 <223> OTHER INFORMATION: Xaa = any amino acid
166 <220> FEATURE:
167 <221> NAME/KEY: UNSURE
168 <222> LOCATION: (236)
169 <223> OTHER INFORMATION: Xaa = any amino acid
171 <400> SEQUENCE: 2
```

```
    172 Met Gly Gly Ala Val Met Val Ala Ile Ala Ala Ser Ile Gly Asn Leu
    173  1                   5                  10                  15
    175 Leu Gln Gly Trp Asp Asn Ala Thr Ile Ala Gly Ala Val Leu Tyr Ile
    176              20                  25                  30
    178 Lys Lys Glu Phe Asn Leu Gln Ser Glu Pro Leu Ile Glu Gly Leu Ile
    179          35                  40                  45
    181 Val Ala Met Phe Leu Ile Gly Ala Thr Val Ile Thr Thr Ser Pro Gly
    182      50                  55                  60
    184 Pro Arg Ala Asp Cys Val Gly Arg Arg Pro Met Leu Val Ala Ser Ala
    185  65                  70                  75                  80
    187 Val Leu Tyr Phe Val Ser Gly Leu Val Met Leu Trp Ala Pro Ile Val
    188              85                  90                  95
    190 Tyr Ile Leu Leu Leu Ala Arg Leu Ile Asp Gly Phe Gly Ile Gly Leu
    191             100                 105                 110
    193 Ala Val Thr Leu Val Pro Leu Tyr Ile Ser Glu Thr Ala Pro His Arg
    194             115                 120                 125
W--> 196 Xaa Ser Trp Gly Xaa Xaa Asn Thr Leu Pro Gln Phe Ile Gly Val Xaa
    197             130                 135                 140
    199 Gly Gly Met Phe Leu Ser Tyr Cys Met Val Phe Gly Met Ser Leu Met
    200 145                 150                 155                 160
    202 Pro Lys Pro Asp Trp Arg Leu Met Leu Gly Val Leu Ser Ile Pro Ser
    203             165                 170                 175
    205 Leu Xaa Tyr Phe Gly Leu Thr Val Phe Tyr Leu Pro Glu Ser Pro Arg
    206             180                 185                 190
    208 Trp Leu Val Ser Lys Gly Arg Met Ala Glu Ala Lys Arg Val Xaa Gln
    209             195                 200                 205
    211 Arg Leu Arg Gly Arg Glu Asp Val Ser Xaa Glu Xaa Ala Leu Leu Val
    212         210                 215                 220
    214 Glu Gly Leu Gly Val Gly Lys Asp Thr Arg Ile Xaa Glu Tyr Ile Ile
    215 225                 230                 235                 240
    217 Gly Pro Ala Thr Glu Ala Ala Asp Asp Leu Val Thr Asp Gly Asp Lys
    218             245                 250                 255
    220 Glu Gln Ile Thr Leu Tyr Gly Pro Glu Glu Gly Gln Ser Trp Ile Ala
    221             260                 265                 270
    223 Arg Pro Ser Lys Gly Pro Ile Met Leu Gly Ser Val Leu Ser Leu Ala
    224             275                 280                 285
    226 Ser Arg His Gly Ser Met Val Asn Gln Ser Val Pro Leu Met Asp Pro
    227         290                 295                 300
    229 Ile Val Thr Leu Phe Gly Ser Val His Glu Asn Met Pro Gln Ala Gly
    230 305                 310                 315                 320
    232 Gly Ser Met Arg Ser Thr Leu Phe Pro Asn Phe Gly Ser Met Phe Ser
    233             325                 330                 335
    235 Val Thr Asp Gln His Ala Lys Asn Glu Gln Trp Asp Glu Glu Asn Leu
    236             340                 345                 350
    238 His Arg Asp Asp Glu Glu Tyr Ala Ser Asp Gly Ala Gly Gly Asp Tyr
    239             355                 360                 365
    241 Glu Asp Asn Leu His Ser Pro Leu Leu Ser Arg Gln Ala Thr Gly Ala
    242         370                 375                 380
    244 Glu Gly Lys Asp Ile Val His His Gly His Arg Gly Ser Ala Leu Ser
```

```
245 385              390              395              400
247 Met Arg Arg Gln Ser Leu Leu Gly Glu Gly Gly Asp Gly Val Ser Ser
248              405              410              415
250 Thr Asp Ile Gly Gly Gly Trp Gln Leu Ala Trp Lys Trp Ser Glu Lys
251              420              425              430
253 Glu Gly Glu Asn Gly Arg Lys Glu Gly Gly Phe Lys Arg Val Tyr Leu
254              435              440              445
256 His Gln Glu Gly Val Pro Gly Ser Arg Arg Gly Ser Ile Val Ser Leu
257     450              455              460
259 Pro Gly Gly Gly Asp Val Leu Glu Gly Ser Glu Phe Val His Ala Ala
260 465              470              475              480
262 Ala Leu Val Ser Gln Ser Ala Leu Phe Ser Lys Gly Leu Ala Glu Pro
263              485              490              495
265 Arg Met Ser Asp Ala Ala Met Val His Pro Ser Glu Val Ala Ala Lys
266              500              505              510
268 Gly Ser Arg Trp Lys Asp Leu Phe Glu Pro Gly Val Arg Arg Ala Leu
269              515              520              525
271 Leu Val Gly Val Gly Ile Gln Ile Leu Gln Gln Phe Ala Gly Ile Asn
272     530              535              540
274 Gly Val Leu Tyr Tyr Thr Pro Gln Ile Leu Glu Gln Ala Gly Val Ala
275 545              550              555              560
277 Val Ile Leu Ser Lys Phe Gly Leu Ser Ser Ala Ser Ala Ser Ile Leu
278              565              570              575
280 Ile Ser Ser Leu Thr Thr Leu Leu Met Leu Pro Cys Ile Gly Phe Ala
281              580              585              590
283 Met Leu Leu Met Asp Leu Ser Gly Arg Arg Phe Leu Leu Leu Gly Thr
284     595              600              605
286 Ile Pro Ile Leu Ile Ala Ser Leu Val Ile Leu Val Val Ser Asn Leu
287     610              615              620
289 Ile Asp Leu Gly Thr Leu Ala His Ala Leu Leu Ser Thr Ile Ser Val
290 625              630              635              640
292 Ile Val Tyr Phe Cys Cys Phe Val Met Gly Phe Gly Pro Ile Pro Asn
293              645              650              655
295 Ile Leu Cys Ala Glu Ile Phe Pro Thr Arg Val Arg Gly Leu Cys Ile
296              660              665              670
298 Ala Ile Cys Ala Phe Thr Phe Trp Ile Gly Asp Ile Ile Val Thr Tyr
299              675              680              685
301 Ser Leu Pro Val Met Leu Asn Ala Ile Gly Leu Ala Gly Val Phe Ser
302     690              695              700
304 Ile Tyr Ala Val Val Cys Leu Ile Ser Phe Val Phe Val Phe Leu Lys
305 705              710              715              720
307 Val Pro Glu Thr Lys Gly Met Pro Leu Glu Val Ile Thr Glu Phe Phe
308              725              730              735
310 Ala Val Gly Ala Lys Gln Ala Ala Ala Lys Ala
311              740              745
```

313 <210> SEQ ID NO: 3
314 <211> LENGTH: 443
315 <212> TYPE: DNA
316 <213> ORGANISM: Oryza sativa

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 07/20/2005
PATENT APPLICATION: US/10/051,909A   TIME: 11:22:54

Input Set : **A:\10051909 Sequence Listing.txt**
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Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 29,622,636,638,669,771,822,856,889,896,944
Seq#:2; Xaa Pos. 129,133,134,144,178,207,218,220,236
Seq#:3; N Pos. 193,388,435,439
Seq#:4; Xaa Pos. 65,130
Seq#:11; N Pos. 421,434,441,458,483,493,498
Seq#:17; N Pos. 149,271,304,334,357,476,599,602
Seq#:18; Xaa Pos. 34,85,98,112,151
Seq#:22; Xaa Pos. 102
Seq#:35; N Pos. 1584
Seq#:36; Xaa Pos. 528
Seq#:40; Xaa Pos. 4
Seq#:41; Xaa Pos. 5
Seq#:42; Xaa Pos. 3,4,5,7
Seq#:44; Xaa Pos. 3,5
Seq#:45; Xaa Pos. 5,8,14
Seq#:46; Xaa Pos. 7,9,10
Seq#:47; Xaa Pos. 6
Seq#:48; Xaa Pos. 10
Seq#:50; Xaa Pos. 3,10
Seq#:51; Xaa Pos. 6,10
Seq#:52; Xaa Pos. 7
Seq#:53; Xaa Pos. 5,20
Seq#:54; Xaa Pos. 4,9,13,17
Seq#:55; Xaa Pos. 4,12,18,24
Seq#:56; Xaa Pos. 14

Invalid <213> Response:
Use of "Artificial" only as "<213> Organism" response is incomplete,
per 1.823(b) of New Sequence Rules. Valid response is Artificial Sequence.

Seq#:39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56

VERIFICATION SUMMARY   DATE: 07/20/2005
PATENT APPLICATION: **US/10/051,909A**   TIME: 11:22:54

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```
L:77 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0
M:341 Repeated in SeqNo=1
L:196 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:128
M:341 Repeated in SeqNo=2
L:342 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:180
M:341 Repeated in SeqNo=3
L:376 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:64
M:341 Repeated in SeqNo=4
L:827 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:420
M:341 Repeated in SeqNo=11
L:1087 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 after pos.:120
M:341 Repeated in SeqNo=17
L:1134 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 after pos.:32
M:341 Repeated in SeqNo=18
L:1375 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:96
L:2556 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:1560
L:2672 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:512
L:2964 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:40 after pos.:0
L:2985 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:41 after pos.:0
L:3011 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42 after pos.:0
L:3052 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44 after pos.:0
L:3082 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45 after pos.:0
L:3112 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:46 after pos.:0
L:3137 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47 after pos.:0
L:3158 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:48 after pos.:0
L:3199 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:50 after pos.:0
L:3225 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:0
L:3246 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:52 after pos.:0
L:3272 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:53 after pos.:0
M:341 Repeated in SeqNo=53
L:3312 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:54 after pos.:0
M:341 Repeated in SeqNo=54
L:3352 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:55 after pos.:0
M:341 Repeated in SeqNo=55
L:3381 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:56 after pos.:0
```